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14. ABSTRACT <p>The team conducted dielectric analysis of the evaluated samples to promote a better understanding of the mechanism of how the microstructure exposed to varying frequency fields and temperature changes dielectric parameters. The results were published as "S. Yang, R. Benitez, A. Fuentes, and K. Lozano "Dielectric Analysis of VGCNF Reinforced Polyethylene Composites" Composite Science and technology 67, 6 (2007) 1159". Relating to the physical integrity of the polymer composite due to microwave radiation, a journal article was also published "R. Benitez, A. Fuentes, K. Lozano; "Effects of Microwave Assisted Heating of Carbon Nanofiber Reinforced High Density Polyethylene" Journal of Materials Processing Technology 190 (2007) 324-331".</p>					
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The University of Texas Pan American

Awarded : \$200,000

PI: Dr. Karen Lozano, CoPI: Dr. Arturo Fuentes

SPRING IV Participation

Start Date: August, 2005

Final report due 9/01/07

FINAL REPORT

The SPRING IV project has as objectives: 1) the development of a better understanding of the mechanisms that is taking place on the shielding effectiveness of electromagnetic interference, 2) the evaluation of thermal conductivity of the developed composites and 3) the analysis of the physical integrity of the polymer composites due to microwave radiation exposure.

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Work relating to the previously developed fixture (SPRING III) is still being evaluated by patent lawyers. Experimental validation of the fixture was also conducted and the work will be published as soon as the team receives approval from the lawyers. The developed fixture keeps attracting attention given the small required sample and the large frequency range, companies such as The Aerospace Corporation, Yazaki Corporation of America (YTCA), Advanced Ceramic Research (ACR), and NASA to mention some have used it as well as several Universities’ research groups.

Our participation in SPRING IV has substantially increased our collaborations and funding opportunities, Dr. Lozano was invited to participate as CoPI in one of Dr. Baughman’s proposal (UTD) submitted to NSF. The proposal was funded for \$1,000,000 for 4 years. At the same time Dr. Lin (UTPA) and Dr. Qualls also submitted one proposal to NSF with Dr. Lozano as CoPI and two other faculty members from UT Austin (we met

Dr. Chen and Dr. Wilson through the SPRING participation), this proposal was also funded for \$1,000,000.

A significant component of the plan was the mentoring of undergraduates at UTPA. We expected that our participation in the SPRING program and exciting collaboration with the Air Force was going to encourage our students to seek Ph.D. degrees past our Masters-only graduate option and we have been right. Our participation and principally our attending SPRING annual meetings have been such a success for our students. This is the list of students that have been directly funded by SPRING IV.

Shenshi Chen	High School student
Laura Espinoza	Undergraduate St, Now Graduate Student at UTPA
Duane Guzman	Undergraduate Student
Krystal Hernandez	Undergraduate Student
Jesus Benavides	Undergraduate Student
Arturo Alvarez	Undergraduate Student
Margarita Lopez	Undergraduate Student
Lariza Navarro	Undergraduate Student
Jesus Salinas	Undergraduate Student
Wilford McGee	Undergraduate Student
Faraon Torres	Undergraduate Student
Astrid Torres	Undergraduate Student
Randa Cortez	Undergraduate Student
Javier Guerra	Undergraduate Student
Troy Petty	Undergraduate Student
Andres Ramos Campa	Undergraduate Student
Wasiela Salinas	Undergraduate Student
Joshua Wilkins	Undergraduate Student
Carolina Mollick	Assisted with MOE preparation, purchasing and other student administrative related issues
Andres Garcia	Master Student

Jin Tan	Master Student
Rogelio Benitez	Master Student
Sanjay Kalindini	Master Student
Azalia Lomeli	Master Student